

Amendment of claims

1. (Currently Amended) ~~In a~~ A solid oxide fuel cell (SOFC) for coproducing syngas and electricity by internal reforming of methane and carbon dioxide fabricated with an ion conductive solid oxide electrolyte, a catalyst electrode (anode) and an air electrode (cathode), ~~the improvement comprising;~~ wherein said catalyst electrode (anode) is coated with Ni-YSZ type or perovskite type metal oxide.
2. (Currently Amended) The solid oxide fuel cell according to claim 1, wherein one side of ~~YSZ (Yttria Stabilized Zirconia)~~ said solid oxide electrolyte is attached to a LaSrMnO₃ type air electrode (cathode) and the other side of said solid oxide electrolyte is attached to a catalyst electrode (anode) of Ni-YSZ type or perovskite type metal oxide.
3. (Original) The solid oxide fuel cell according to claim 1 or 2, wherein said Ni-YSZ type metal oxide has a composition of 40-55 wt % of Ni, 40-55 wt % of YSZ and 0-10 wt % of CeO₂ or MgO.
4. (Canceled)
5. (Currently Amended) ~~In an~~ An electrochemical conversion system comprising a gas feed part (200), a reaction part (100) equipped with an electrochemical fuel cell and

connected to said gas feed part and an analysis part (300) to measure and control reaction results of said reaction part, wherein ~~the improvement comprises:~~

a mixed gas containing carbon dioxide and hydrocarbon is introduced to said reaction part (100) through said gas feed part (200).

said reaction part (100) is equipped with a solid oxide fuel cell (SOFC) with a solid oxide electrolyte attached to an air electrode (cathode) and a catalyst electrode (anode) of Ni-YSZ type or perovskite type metal oxide, and

a syngas and an electricity are simultaneously co-produced in said catalyst electrode (anode) by internal reforming of methane and carbon dioxide and electrochemical reaction.

6. (Original) The electrochemical conversion system according to claim 5, wherein said mixed gas has a volume ratio of CH₄:CO₂:H₂O:O₂:H₂:CO of 1:0.4-0.6:0.4-0.7:0.01-0.2:0-1:0-1.

7. (Currently Amended) The electrochemical conversion system according to any of claim 5 - 6, wherein said system is applied to a process producing greenhouse gases, CO₂ and CH₄ as by-product, a process using hydrogen, natural gases and petroleum as heat source, a petrochemical process, a cement process, a process treating gases generated in landfill gas and thermoelectric power plants.

8. (Canceled)

9. (Currently Amended) A process for preparing an electrochemical cell for internal reforming of hydrocarbon and carbon dioxide, which comprises the steps of:

(a) preparing an aqueous precursor solution having a composition of 40-55 wt % of Ni 40-55 wt % of YSZ and 0-10 wt % of CeO₂ or MgO;

(b) adding and mixing 0.3-1.2 wt % of methyl cellulose 0.8-1.5 wt % of carbonylmethyl cellulose and 1.3-2 wt % of polyethylene oxide as a binder, and 1-5 wt % of isopropylalcohol (IPA) as a dispersant based on 100 wt % of solid content to said aqueous precursor solution, and then ball-milling to obtain a Ni-YSZ type anode slurry: and

(c) coating one side of a planar-type solid oxide electrolyte with said catalyst electrode slurry prepared above and the other side with an air electrode material (LSM), drying and sintering to prepare ~~the electrochemical cell~~ in a disk shape.